

HARIHARAN NATARAJAN

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Education

Bachelor of Science: Mathematics (Applied) Jun 2028
University of California, San Diego La Jolla, CA

- 3.9 GPA
- Relevant Coursework: Multivariable Calculus, Linear Algebra, Micro/Macro Economics, Accounting

Experience

UCSD Research: APEX Lab Jan 2026–Present
Research Intern San Diego

- Diagnosed and resolved convergence issues in DFT simulations of iridium catalysts by tuning VASP parameters, unblocking 40% of a machine learning project's data pipeline.
- Built atomic models of carbon-nitrogen coupling reaction pathways and wrote HPC submission scripts to calculate energy barriers, contributing to ongoing catalyst design research.
- Collaborated with graduate and postdoc students in a fast-paced research group; pending co-authorship after publication.

The Hedge Fund Club at UC San Diego Jan 2026–Present
Quantitative Analyst San Diego

- Developed 3 DCF and three-statement models in Excel, pulling financial data from Refinitiv to compute WACC and value equities across the financials and real estate sectors.
- Partnered with a 7-person analyst team overseeing a simulated \$10M portfolio; successfully pitched a high-conviction long position backed by quantitative analysis.
- Translated quantitative analysis into clear investment theses, bridging applied math coursework with structured financial decision-making.

Singapore Police Force Aug 2023–Aug 2025
Sergeant Singapore

- Led 3 officers daily as a Sergeant, managing high-stress situations across crime response and high-footfall events (F1, NYE). Responded to 50+ police assistance calls.
- Engaged 20+ public transport users to join the 'Riders on Watch' safety initiative, improving crime reporting efficiency.
- Organized daily briefings over 3 months for the onboarding of 20 new recruits; recruits reported higher confidence in handling public situations.

Projects

SkyGuardian, Search-and-rescue drone mission control 2nd of 150 · Google I/O Hackathon · May 2026

- Built a multi-drone mission-control system fusing a DJI Mavic survey feed and a Tello drone; piped live video through YOLO and Gemini to populate a real-time knowledge graph for situational awareness.
- Implemented a Gemini Live voice agent to fly the Tello with ORB-SLAM3 flight-path reconstruction. Stack: FastAPI, Next.js, YOLO, Gemini, ORB-SLAM3.

Lattice, Durable AI agent for computational chemistry 2nd place · Vercel Hackathon · May 2026

- Built a long-horizon AI agent that plans DFT campaigns on an HPC cluster, polling Slurm jobs and auto-recovering from VASP convergence failures without human intervention.
- Grew directly out of APEX Lab research; demonstrated durable agent behavior that resumes correctly after interruption. Stack: Vercel WDK, Claude Sonnet 4.6, Slurm, VASP, TypeScript.

Argus, Multi-agent competitor intelligence Top-5 · SDxHackathon · Apr 2026

- Architected a multi-agent system running 3 Claude agents concurrently via a FastAPI orchestrator, generating executive briefings with risk signals in under 40 seconds.
- Built orchestrator and agents using async parallel execution and SSE streaming to a React/Vite/Tailwind frontend; shipped with 4 people in 6 hours. Stack: Python, FastAPI, Claude, React, Vite, Tailwind.

WatchDog, CalTrans CCTV monitoring & incident-clipping dashboard GStack × GBrain YC Hackathon · 2026

- Built a live monitoring and clip-capture dashboard for CalTrans (Bay Area District 4) dispatchers; concept drew personal interest from Y Combinator president Garry Tan at the event.
- Stack: Next.js 15, React 19, Supabase, Drizzle, Turborepo, Vercel Cron.

Skills

Languages: Python, TypeScript, JavaScript, Java, HTML, CSS Frameworks: FastAPI, Next.js, React, Node.js, Vite, Tailwind CSS, Turborepo, Vercel WDK

AI & ML: Anthropic API (Claude), OpenAI API, Gemini API, YOLO, ORB-SLAM3, LangChain, Prompt Engineering

Data & Infra: SQL, Supabase, Convex, Tensorlake, Drizzle, Slurm, VASP, HPC pipelines Finance: Excel (DCF, three-statement, WACC), Refinitiv